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09/937,130	01/29/2002	Taku Ishizawa	Q66313	8010

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EXAMINER

VO, ANH T N

ART UNIT PAPER NUMBER

2861

DATE MAILED: 01/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/937,130

Applicant(s)

ISHIZAWA ET AL.

Examiner

Anh T.N. Vo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Amendment filed on 12/10/2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

Response to Applicant's Amendment

The rejection under 35 U.S.C. 112, first paragraph, is withdrawn since the claims were amended.

Claim Objection

Claim 6 is objected to because it does not recite clearly the preamble and the body of the claims. Correction is required.

CLAIM REJECTIONS

Claim Rejections - 35 U.S.C. § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 10 is rejected under 35 U.S.C. 102 (a) as being anticipated by Sato (JP. Pat. 60198256).

Sato discloses in Figures 1-4 an ink storage apparatus comprising:

- an ink pack (12) formed from flexible material and sealingly storing ink therein, and a cartridge case (11) housing the ink pack (12) and having an outer shell formed hermetically, and which is so constructed that pressurized air (16, 20) can be introduced into the case (11) in a mounted state to the recording apparatus, wherein in case that the ink cartridge (10) is mounted to the recording apparatus, after an ink outlet port (15) formed on the ink cartridge (10) is connected to

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the recording apparatus, a pressurized air inlet port (16) formed on the ink cartridge (10) is connected to the record apparatus.

Claims 10, 50 and 54 are rejected under 35 U.S.C. 102 (b) as being anticipated by Kimura et al. (US Pat. 4,558,326).

Kimura et al. disclose in Figures 2 and 5-7B an ink jet recording apparatus comprising:

- an ink pack (5) formed from flexible material and sealingly storing ink therein, and a cartridge case (6) housing the ink pack (5) and having an outer shell formed hermetically, and which is so constructed that pressurized air (14, 15, 15, 17, 18) can be introduced into the case (6) in a mounted state to the recording apparatus, wherein after an interior of the ink pack is in fluid communication with the recording apparatus through an ink outlet port (8, 9) formed on the ink cartridge, an interior of the cartridge case (6) is in fluid communication with the recording apparatus through a pressurized air inlet port (7) formed on the ink cartridge; and
- wherein an electrical connection is complete between the recording apparatus and the ink cartridge when said ink cartridge is mounted on said recording apparatus (not shown), said electrical connection comprising an electrical circuit enabling a pressure pump (16) that pressurizes said pressurized air.

Claim Rejections - 35 U.S.C. § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claim 6-8 are rejected under 35 U.S.C. 103 (a) as being anticipated by Childers et al. (U.S. Pat. 6,130,695).

Childers et al. disclose in Figures 1-10 an ink cartridge for use in an ink jet apparatus comprising:

- an ink cartridge (12) comprising a circuit board (78) having data-readable storage means (26) in which ink information can be stored, and a contact (24) for electrical connection between the storage means (26) and the recording apparatus when the ink cartridge (12) is removably mounted to the recording apparatus, wherein the contact (24) has a contact face, wherein the circuit board (78) is attached to a cartridge case (12) within a box-shaped space, two surfaces (80) of which intersect at right angles and are opened (Figures 7 and 10);
- means (adhesive) for attaching the circuit board (78) is exposed toward one of the opened surfaces (Figures 7 and 10, column 7, lines 31-33); and
- a terminal mechanism (70) arranged on the recording apparatus is electrically connected to the circuit board (78) through the other of the opened surfaces (80) in a state where the cartridge (12) is mounted to the recording apparatus (Figures 9-10).

However, Childers et al does not disclose that the circuit board including a contact face which is opening openly exposed in relationship to the ink cartridge at least a plane substantially parallel to the contact face and a plane substantially perpendicular thereto. However, as shown on Figure 10 of Childers et al, an artisan would recognize that the circuit board (78) inherently has a contact face (side) or a mounting face (side) for attaching the circuit board to the ink cartridge housing. The physical size and shape of the circuit board must be accommodated with the cartridge housing. Thus, selecting the contact face of the Childers would be obvious and is considered to be a matter of a mechanical design expedient for an engineer depending upon the size and the shape of the cartridge housing in which the circuit board to be used. It would have been obvious to a person having skill in the art at the time the invention was made to remodify the contact face of Childers et al for the purpose of accommodating with a predetermined ink

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cartridge housing. Note that as well known in the art, there are different ways to mount the electrical circuit board to a housing. The circuit board can be removably attached to the housing using screws and permanently attached to the housing using the heat welding.

Claims 6-9, 11-13 and 50-56 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Sato (JP Pat. 60198256) in view of Mochizuki et al. (US Pat. 5,666,146) and further in view of Childers et al. (US Pat. 6,130,695).

Sato discloses in Figures 1-3 an ink storage apparatus comprising:

- an ink pack (12) formed from flexible material and sealingly storing ink therein, and a cartridge case (11) housing the ink pack (12) and formed hermetically, and which is so constructed that pressurized air (16, 20) is introduced into the case (11) in a mounted state to the recording apparatus;
- an ink outlet port (15) from the ink pack (12);
- an inlet port (16) for the pressurized air;
- the pressurized air inlet port (16) provided to the ink cartridge (10) is formed in a shape of a hollow cylindrical member formed integrally with the cartridge case (11).

However, Sato does not disclose a valve and on one surface of the cartridge case, there are provided positioning means used when the cartridge is mounted to the recording apparatus; the positioning means is constructed by an opening hole formed so as to surround a positioning pin arranged in the recording apparatus; wherein the opening hole constructing the positioning means is arranged at each of two locations along a longitudinal direction on the one surface of the case; the ink outlet port from the ink pack is arranged substantially in a center between the opening holes arranged at the two locations; on one surface of the cartridge case including a connection terminal of a circuit board having data storage means; the circuit board attaching means being constructed by a projection for heat-welding, which is formed integrally with the cartridge case; the circuit board being attached to the cartridge case such that the projection for

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heat welding is passed through a part of the circuit board and a top of the projection is heat-caulked; and the inlet port is set to 2- 20 mm.

Nevertheless, Mochizuki et al. disclose in Figures 1 and 4 an ink cartridge for an ink jet recording apparatus comprising:

- on one surface (4a) of the cartridge case (4), there are provided positioning means (4g, 4h) used when the cartridge (8) is mounted to the recording apparatus (Fig. 4);
- the positioning means (4g, 4h) is constructed by an opening hole formed so as to surround a positioning pin (16, 17) arranged in the recording apparatus (Fig. 4);
- wherein the opening hole constructing the positioning means (4g, 4h) is arranged at each of two locations along a longitudinal direction on the one surface (4a) of the case (4) (Figures 1 and 4);
- the ink outlet port (2) from the ink pack (1) is arranged substantially in a center between the opening holes (4g, 4h) arranged at the two locations (Figure 1).

Furthermore, Childers et al discloses in Figures 3-5 and 8-9 an ink cartridge for use in an ink jet apparatus comprising:

- a cartridge case (12) housing the ink pack (22);
- on one surface of the cartridge case (12) including a connection terminal (24) of a circuit board (78) having data storage means (26);
- wherein the ink outlet port (20) comprises a valve member (96, 98) (Figure 8); and
- an ink inlet port (120) and a valve (121) located upstream of the ink inlet port (120) (Figure 9).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the teaching of Mochizuki et al. and Childers et al into the Sato ink storage apparatus for the purpose of correctly holding an ink cartridge case at a predetermined position, providing an information storage device relating the level of deliverable ink in an ink and controlling the ink flow to the print head.

It is noted that, the recitation “the circuit board attaching means is constructed by a projection for heat-welding, which is formed integrally with the cartridge case such that the projection for heat welding is passed through a part of the circuit board and a top of the projection is heat-caulk “ instead of adhesive means for performing the function of attaching the circuit board and the cartridge case as recited in the Childers et al. reference is a design expedient for one of ordinary skill in the art for the purpose of attaching between two elements, i.e., the circuit board and the ink cartridge case. Also the recitation “ the inlet port is set to 2- 20 mm” it is seen as a mechanical design expedient for an engineer depending upon particular environment and applications in which the Sato ink cartridge is to be used. Also, since it has been held that where the general conditions of a claim are discovered the optimum or workable range involves only routine skill in the art for the purpose of providing a fluid port communicating between the inside and outside of an ink cartridge.

Claims 50-53 are further rejected under 35 U.S.C. 103 (a) as being unpatentable over Matsui et al (US 6,062,667) in view of Nakazawa et al (US 6,281,911) and further in view of Sato (JP 60198256).

Matsui et al discloses in Figure 5 an ink cartridge comprising:

- an ink pack (13) formed flexible material for storing ink;
- a cartridge case(12);
- an ink outlet (15); and
- a connection terminal (19a, 19b) of a circuit board.

However, Matsui et al does not disclose the pair of position parts and an air outlet port.

Nevertheless, Nakasawa et al teaches in Figure 5 an ink cartridge comprising a pair of position parts (34, 35) for facilitating the smooth insertion of the needles into the ink bag.

Sato teaches in Figures 4A-C an ink cartridge comprising an air supply port (18, 19) for receiving a pressurized air that facilitate the flow of ink from the ink bag to the printhead.

It would have been obvious to a person having skill in the art at the time the invention was made to modify the ink cartridge of Matsui et al by employing the pair of position parts taught by Nakasawa et al and an air supply port suggested by Sato for the purpose of facilitating the smooth insertion of the ink needle and the flow of the supplied ink from the ink bag. Note that, since the function of the pair of the position parts is to guide the insertion of the ink needle, so they can be rearranged to accommodate with the location of the needles and the contact terminal depending upon the physical size and shape of the holder cap. Thus, selecting the locations for the position parts would have been obvious and is considered to be a matter of a mechanical design expedient for an engineer.

Response to Applicant's Arguments

The applicant argues that Childers fails to suggest a contact face being openingly exposed in relation to the ink cartridge at least on a plane substantially parallel to the contact face and a plane substantially perpendicular thereto. The arguments are not persuasive because selecting the contact face of the circuit board for the purpose of accommodating with a predetermined ink cartridge housing would be obvious and is considered a matter of a mechanical design expedient for an engineer.

The applicant argues that Sato does not show that the ink port is connected prior to the pressurized air port. The argument is not persuasive because Figure 4 of Sato shows the ink needle (22) is longer than the air needle (33, 34); obviously, the ink needle (22) must be connected to the ink port (15) before the connections of the air needle (33, 34) to the air ports (18, 19).

Allowable Subject Matter

Claims 1 and 4 are allowed. These claims would be allowable because none of the prior art references of record discloses an ink cartridge comprising a connection terminal of the circuit

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board and the inlet port for the pressurized air are respectively arranged outside the opening holes arranged at the two locations in the combination as claimed.

Claim 57 would be allowable if to include all of the limitations of the base claim and any intervening claims. This claims would be allowable because none of the prior art references of record discloses an ink cartridge comprising said ink outlet port, said air inlet port, and said connection terminal are disposed so as to create a substantially linear line along a lengthwise direction of said surface in the combination as claimed.

CONCLUSION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Anh Vo whose telephone number is (703) 305-8194. The examiner can normally be reached on Tuesday to Friday from 8:00 A.M.to 6:00 P.M.. The fax number of this Group 2800 is (703) 305-3431 or 305-3432.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.



ANH T.N. VO
PRIMARY EXAMINER
January 16, 2004